

1.1 Radio Astronomy

1.1.1 Maintenance and Calibration

- Radio Astronomy R&D workstations (RAC60, RAC60A, RAC60B and RMVNC) have been moved to their definitive location at the 300 room, near the MarkIV data acquisition terminal. Documentation updated.
- In order to solve the low efficiency problem with DSS54 Q-band receiver, the M8 mirror position has been adjusted to its nominal configuration. Pending to perform efficiency measurements when M5 ellipsoid is back operational after Ka-band phase 2 mirror installation.
- Continued the development and testing of several TDN connection blocks to support VLBI observations.

1.1.2 RA meetings, R&D and Outreach activities

CGM participated in the JPL telecon with the ATOT group about the 22 GHz (K-band) Development Planning.

A big effort has been made in the DSN to follow up the 2009 July Jupiter impact with our antennas. DSS-63 antenna time was made available thanks to the collaboration of following projects: MAP, VGR1, MRO, M01O and CLU3. Host Country group in MDSCC has focused their search in water and ammonia emission from the impact. By observing the K band maser line of water vapor, as well as a number of ammonia transitions (depending on the degree of excitation and detection), they aim to help disentangle the nature of the impacting object, and also provide new inputs about the Jovian high atmosphere.

DSN contribution to the Jupiter impact study is particularly good, because of the almost exclusive availability of instrumentations operating in K-band with high sensitivity. Our data will fill the gap in mm wavelengths, for example, unable to look for molecular transitions of water or ammonia.

1.1.3 Observations

1.1.3.1 Host Country Spectroscopy

During this month spectroscopy observations with DSS-63 resumed. They were carried out using the SPB500 and WVSR as spectrometers, and the MarkIV data acquisition terminal as baseband converter. DSS-54 Q-band commissioning phase is in halt until Ka-band phase2 downtime period finishes in October.

DOY	minutes scheduled	minutes used	Percent good data	Activity	comments
203	200	200	70	"GBRA H/C D63-JupiterToO"	OK
204	135	135	90	"GBRA H/C D63-JupiterToO"	OK
205	470	470	100	"GBRA H/C D63-JupiterToO"	OK
209	50	50	100	"GBRA H/C D63-JupiterToO"	OK
209	280	280	100	"GBRA H/C D63-JupiterToO"	OK
210	60	60	100	"GBRA H/C D63-JupiterToO"	OK

1.1.3.2 Interferometry

MDSCC participated in 4 Very Long Baseline Interferometric (VLBI) observations (2160 min in total):

- RFC Clock Synchronization on DSS-65 (3 observations; 720 min): 100% data collected; performance of the system nominal.
- RFC Catalog X/Ka on DSS-55 (1 observation; 1440 min): 49 sources lost (6% of total) due to DSS55 antenna drive problems (DR#M105413). Second successful 224Mbps recording using the 4MHz VC filters.